Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Section 68.4(a) of the Commission's Rule	)	WT Docket No. 01-309
Governing Hearing Aid-Compatible Telephones	)	RM-8658
	)	
	)	

COMMENTS OF COCHLEAR AMERICAS

I. Introduction

Cochlear Limited, the parent company for Cochlear Americas, is the worldwide leader in the manufacture and sale of cochlear implant systems. There are over 35,000 people worldwide who have cochlear implant systems developed and manufactured by Cochlear Limited; an additional 10,000 people worldwide have implants manufactured by other companies. These comments are being submitted by Cochlear Americas, the North American office operating from Englewood, Colorado.

A cochlear implant is an electronic device that enables children and adults with severe to profound hearing loss who do not derive significant benefit from hearing aids to access spoken language and environmental sounds. An estimated 23,000 people in America are cochlear implant users, a figure that is growing by 25 to 30% each year. It is likely that these trends will continue and even escalate in the future. The estimated population of eligible users in the United States exceeds 500,000 people. The eligible base is growing as: (1) the population ages, (2) children with hearing loss are identified

within days of birth allowing greater numbers of families to choose spoken language approaches for their deaf children,[1] and (3) expanding clinical guidelines for determining candidacy increase the numbers of children and adults who are part of the candidate pool.

Cochlear implant technology has improved to the point that most users of current Cochlear technology are now able to understand 90% of speech without lipreading. This means that deaf children and adults who in the recent past would not have been able to use voice telephones are now capable of fully participating in and benefiting from the telecommunications revolution, including digital wireless telephones with all of their features and benefits. Cochlear Americas is pleased to submit these comments on behalf of current and future users of cochlear implants in the United States. As a company, Cochlear Americas is committed to addressing the lifelong needs of cochlear implant recipients.

Cochlear Americas supports removing the exemption for public mobile service telephones in Section 68.4(a) of the Commission's rules governing hearing aid-compatible telephones. Cochlear implant recipients wish to maximize use of their residual hearing and they seek telecommunications devices which allow them to do so. Wireless telephones are now an essential part of our lives—at work and at home. Many companies either provide wireless phones for, or reimburse employees for the cost of their wireless service because this service has become an essential part of conducting business. An increasing number of teenagers in America have their own cellular phones**,** further demonstrating the extent to which Americans have integrated this technology into their everyday lives. And cellular phones have become virtually indispensable in emergency situations, where having immediate telephone access has often meant the

[1] As of December 2001, 35 states and the District of Columbia have enacted laws requiring universal

difference between life and death. We believe that users of hearing technology should have the same access to and advantages of mobile telephone services as the rest of the population.

II. Shielding of the hearing device is not, by itself, sufficient.

The Commission notes that one possible method of achieving compatibility is through shielding of the electronics of the device.[2] Although all cochlear implant devices manufactured by Cochlear Limited have been redesigned with shielding, the ability of a cochlear implant recipient to effectively use a digital wireless telephone depends as well upon the characteristics of the digital wireless telephone and the service used with that phone.

Cochlear Limited devices are designed to ensure that they will not produce unintended stimuli for users, both in order to protect cochlear implant users, and to allow them to take advantage of wireless telecommunications services if they chose to do so. Specifically, Cochlear's modifications are designed to ensure that our users do not experience interference either from their use of digital wireless telephones or from bystander use of wireless devices (i.e., interference when an implant user is in close proximity to someone else's telephone.) However, if a digital wireless telephone has not been designed for compatibility, our cochlear implant users may experience audible interference with the implant's microphone or the sensitive amplifiers in the speech processor. The audible interference may be particularly noticeable in instances in which the wireless phone is set to maximum transmission power (i.e., 2W for 900 MHz for GSM telephones) and/or when the handset of the phone is placed less than 20 cm from

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newborn hearing screening for hearing loss. These laws allow for the identification of candidates for cochlear implants at the earliest possible time in a child's life.

[2] *In the Matter of Section 68.4 of the Commission's Rules Governing Hearing Aid-Compatible Telephones,* Notice of Proposed Rulemaking, WT Dkt. No. 01-309, FCC 01-320 (Nov. 14, 2001) (NPRM) at ¶8.

the cochlear implant microphone. Of the three digital wireless technologies– CDMA, TDMA, and GSM—cochlear implant users experience the worst interference with GSM due to the amplitude and burst nature of its signal, especially when operating at its maximum power. There appears to be a trend toward adopting GSM exclusively in America – to mirror Europe – which will make telecommunications access all the more difficult without hearing aid compatibility rules.

In addition to making substantial efforts to address shielding of our devices from electromagnetic interference from wireless phones, Cochlear's next generation cochlear implant, the 3G, will include an internal telecoil allowing our cochlear implant recipients maximum opportunities in using telecoil compatible telephones. We want our user community to have full access to the same wireless telephones that are available to the hearing population.

Section 255 of the Telecommunications Act requires wireless telecommunications manufacturers to design, develop and fabricate their equipment in a manner that allows people with disabilities to access and use wireless services. Although Section 255 has been in place for six years, relatively little progress has been made to address the interference problem and to provide telecoil linkage.[3] Analog services – which are the only current alternative for hearing technology users – offer an inferior alternative to digital services providing lesser service at a much higher cost. Indeed, most service providers have made clear their interest in withdrawing from the analog business.[4]

[3] One exception to this are the telephones manufactured by Samsung, which are discussed later in these comments.

[4] See e.g., Comments of AT&T Wireless at 2-3, Comments of Cingular Wireless LLC at 2; Comments of Ericcson at 3-6; Comments of Verizon Wireless at 8, all submitted in response to the Commission's proceeding *In the Matter of Year 2000 Biennial Regulatory Review-Amendment of Part 22 of the Commission's Rules to Modify or Eliminate Outdated Rules Affecting the Cellular Radiotelephone Service and other Commercial Mobile Radio Services*, Notice of Proposed Rulemaking, WT Dkt No. 01-108 (May 17, 2001) (Part 22 NPRM). Although some of these parties proposed that there be a transition period before the complete conversion to digital services, all proposed eventual elimination of analog services.

Unless the Commission *requires* telephone manufacturers to address compatibility with hearing devices, the experience of the past six years indicates that it is unlikely that across-the-board changes in telephone equipment design will occur.

III. The pairing approach is not a substitute for technical standards on compatibility.

The Cellular Telecommunications and Internet Association (CTIA), the Telecommunications Industry Association (TIA), and Verizon assert that it is premature to begin a rulemaking because the wireless industry has been working on the problem, most notably by developing a standard for measuring interference between hearing aids and digital wireless telephones. The Commission asks for input on whether this proposed "pairing approach" suggested by telephone industry commenters would be satisfactory to hearing aid users.[5] Cochlear does not believe that this approach is satisfactory, nor that it constitutes an appropriate measure of progress. Consumers tell us that such a matrix to pair phones and hearing technology would be confusing to many people. We continue to hear from our user and professional community that sales personnel in phone stores are not knowledgeable about the problems of cell phones causing interference with hearing technology, despite the fact that this has been an issue of concern since digital phones were first introduced in the United States in 1996. Although a number of service providers have made good faith efforts to educate sales personnel about compatibility issues, the reality is that an individual consumer is more likely to encounter someone who does not understand these issues than someone who does. In order for the pairing scheme to work, consumers would need know that (1) there is a pairing matrix, (2) the rating for their hearing technology, (3) the rating for the telephone that they are considering buying,

[5] NPRM at ¶26.

and (4) how to use the pairing matrix to make decisions. We think this is overly complicated.

There are other reasons that the pairing approach cannot solve the accessibility issues at hand. Most importantly, the pairing approach suggested by the wireless industry does not, per se, address compatibility. What this means is that there are likely to be very few matches that actually enable hearing technology users to effectively use the phones listed in the measurement grid. As the Commission notes, *technical* standards are needed to enable the industry to come into compliance with the statutory provision for hearing aid compatibility after the exemption has been lifted.[6] A standard which simply *measures* the interference that exists between hearing aids and wireless telephones will not succeed in eliminating the problems now experienced when using those phones.

Finally, even were a pairing approach to be used *with* mandated technical standards, it is important to note that participation in the existing measurement standard is merely voluntary. The Commission refers, in its NPRM, to the "voluntary certification program" that CTIA has established to test and categorize phones according to the amount of interference they cause.[7] If, at some point a measurement standard is used in conjunction with technical standards, consumers need assurances that all manufacturers will agree to the testing and categorizing of their phones. To date, the measurement standard has accomplished little or nothing to improve accessibility. In fact, discussion of this measurement standard appears to have been a distracting factor for wireless companies, supplanting meaningful progress in implementing design changes in digital wireless telephones. The only "solution" that industry continually refers to is the development of peripheral devices, such as the device that is available for hearing aid

[6] NPRM at ¶16.

users who have a telecoil in their hearing aid(s). Such peripherals have always been considered a short-term solution. Until there is an FCC requirement for hearing aid compatibility, there is unlikely to be any real progress on this matter by the wireless industry.

IV. Technical standards should mandate internal compatibility for all mobile service telephones.

The Commission asks whether there should be a requirement for industry to develop technical standards for compatibility between wireless devices and hearing aids.[8] Cochlear strongly urges the Commission to require the development of technical standards to achieve compatibility. The problems that hearing technology users have experienced when trying to use digital wireless telephones have been well documented. In both independent studies and comments submitted to the Commission, consumers have consistently reported on the difficulties they have had when using these phones with their hearing aids and cochlear implants.[9] All of these consumers have been unanimous in their request that the Commission lift the exemption for wireless phones.[10] Cochlear joins this unanimous appeal to the Commission to mandate technical standards for wireless telephone compatibility.

The Commission also seeks comment on whether incorporation of an external device to achieve compatibility would bring the telephone into compliance with the

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[7] NPRM at ¶13.
[8] NPRM at ¶16.
[9] Since October 20, 20000, the Commission has received more than 150 comments from individuals and organizations documenting the difficulties that individuals with hearing disabilities have had when trying to use digital wireless phones. Some of these comments were sent in response to the Wireless Bureau's Public Notice seeking comment on the request to re-open the petition for rulemaking on hearing aid compatible telephones (released October 25, 2000) (Public Notice). Others were sent prior to that time.
[10] See generally, Comments of Self Help for Hard of Hearing People; Comments of Council of Organizational Representatives on National Issues Concerning People who are Deaf or Hard of Hearing; Comments of California Foundation for Independent Living Centers, all submitted in response to the Commission's Public Notice.

statute.[11] Cochlear maintains that use of an external device would not be in compliance with the Congressional mandate of the HAC Act. That Act states explicitly that telephones are considered to be hearing aid compatible only if they "provide internal means for effective use with hearing aids."[12]

Up until the forthcoming introduction in 2002 of the 3G cochlear implant system, Cochlear users were able to use wireline and wireless telephones by one of two means: they could either couple acoustically with the telephone (by holding the telephone up to their implant microphone) or they could use an external "plug-in" device. The consumer input that we have received over the past 8-10 years clearly has indicated that our user community strongly prefers an "internal means" of compatibility that does not require use of peripheral devices. The incorporation of an internal access feature, such as a means for inductive coupling with telecoils, provides the advantage of allowing an individual to comfortably and easily use a telephone in noisy environments. Because background noise continues to be a problem for people with all levels of hearing loss, as well as all users of hearing technology, it is important to provide this kind of linkage. Wireless telephones are often used in noisy environments including airports, highways, and city streets—situations that are difficult listening environments for everyone, but especially so for individuals with hearing disabilities. It is for this very reason that Cochlear engineered internal telecoil linkage into our latest generation of cochlear implant systems. Cochlear understands that having such linkage can make a significant difference in the ability of its users to effectively use both wireline and eventually wireless telephones.

External devices have other problems as well. Typically, these devices impose additional costs on their users, above and beyond what individuals without hearing loss

[11] NPRM at ¶17.

need to spend to obtain wireless access. For example, neckloops designed for inductive coupling with some wireless telephones can cost as much as $100 and require the regular replacement of expensive batteries. Additionally, external devices can be quite burdensome for their users. Most individuals enjoy the convenience of being able to instantly answer a ringing phone. In contrast, neckloop users must first answer the phone, next alert the caller of the need to wait until the neckloop and connecting wires are in place, and finally hook up the various connections. The time consumed in establishing this hook-up is not only lengthy; it can result in the loss of incoming calls.[13] These additional hurdles can also discourage wireless phone use by senior citizens and others who may have dexterity problems.

Yet another problem with the external devices that have been developed thus far is that they do not offer compatibility with GSM technology. As the industry moves in the direction of universally deploying telephone models and services reliant on GSM, attention needs to be directed to ensure internal solutions that are compatible with this technology.

At the time that Congress enacted the HAC Act and its predecessor, the Telecommunications for the Disabled Act of 1982,[14] external devices to achieve hearing aid compatibility were available. Citing the need to make "the technological revolution in telecommunications available to all Americans, including those with disabilities,"[15] Congress, in both of these Acts, made a deliberate decision to reject reliance on these external devices, in favor of access features that would be built right into telephone sets.

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[12] 47 U.S.C. § 710(b)(1)(B).
[13] See *e.g.,* Comments of Penny Allen who reported that she needs "to plan when making and receiving a call." (submitted October 4, 2001), and Comments of Joan Ireland, who raised concerns about the extra gear she needs to carry around, and her interest in obtaining a "light weight phone that she can whip out like others."(submitted October 7, 2000).
[14] P. L.97-410, codified as amended at 47 U.S.C. §610.

The Commission must now follow the legislative intent set forth in these Acts, as it addresses issues of compatibility for wireless phones.

V. Strong justification for revoking the exemption for wireless phones exists.

The HAC Act requires the Commission to consider four criteria in determining whether it should revoke or limit the exemption for mobile service telephones. Cochlear believes that all four conditions necessary for Commission action to revoke the exemption are met:

1. It is in the public interest to provide deaf and hard of hearing people who use hearing technology the same access to wireless telephones as everyone else.

Employees who cannot use wireless telephones are at a disadvantage. As a society, we want children and adults with hearing loss to be able to operate on a level playing field. Industry commentary that there are alternatives, such as wireless analog services and external devices, are a weak argument against revoking the exemption. The wireless industry itself has urged that it be allowed to discontinue analog service, which is inferior to digital service in quality of reception, features, and cost. And the Commission has initiated a proceeding that asks whether market forces are now sufficient to meet consumer demands for wireless services, so that analog service can be eliminated all together.[16] External devices are unwieldy and unpopular with consumers and they are prone to interference due to long wires. New devices produced by Cochlear Corporation will include a telecoil but this is a first in cochlear implant technology across all of the three brands of devices sold in the United States. In order to ensure effective access to wireless communications by individuals who rely on hearing technologies – a goal which

[15] H.Rep. No. 97-888, 97th Cong., 2d Sess., (1982) at 5.
[16] Part 22 NPRM at ¶24.

is clearly within the public interest – the Commission must revoke the exemption for mobile service telephones and mandate technical compatibility standards.

2. Continuing the exemption would have an adverse impact on individuals with hearing disabilities.

At present, there are over 127 million Americans who have wireless telephones. Approximately 62% of these individuals use digital technologies. The fact that many individuals with hearing loss who use hearing technology cannot now take advantage of the low rate structure and plentiful features of these technologies is inequitable. The communication characteristics of people with severe to profound hearing loss is changing. As of May, 2001 65% of all newborn babies had been screened for hearing loss prior to leaving the hospital. These young children are now increasingly being fit with hearing aids and if appropriate, a cochlear implant, allowing them full access to spoken language. This new generation of children with significant hearing loss will want to have full use of voice telephones and will need access to the latest telecommunications technology—the same as their hearing peers. We owe them the right to do this.

3. It is now technologically feasible to provide mobile telephones that are hearing aid compatible.

We have tested several Samsung PCS telephones which have internal telecoils**,** high levels of volume boost, and which do not interfere with the cochlear implant systems that have immunity improvements manufactured by Cochlear Corporation. For example, a sample of 10 cochlear implant users (3G, HS8 with SPRINT, and ESPrit—22) indicated that they did not experience detectable interference with the Samsung SPH-N200 provided through Sprint PCS or the Samsung SCN-N150 sold through Verizon. Moreover, Cochlear's newest product, the 3G, will have internal telecoil coupling and

will be released in early 2002. Several Cochlear employees and others who have the 3G have also successfully used their telecoil option with Samsung PSC digital phones.

The Samsung phones appear to be usable by both hearing aid and cochlear implant users. Although some hearing aid users note detectible interference, all indicated that they could use the Samsung handsets—both on the telecoil setting and by using the phone with acoustical coupling. The Samsung SPH-N200 flip-up mobile phone is a "mainstream" telephone that is popular with wide-ranging consumers—not just those who use hearing technology. It is feature-rich and provides voice mail, call forwarding, and wireless web access. Further, the phone is small and trendy—comparable to other phones on the market. Interestingly, neither the user guide nor the Samsung web site mentions that the handset is compatible with hearing technology, that it has exceptionally good volume boost, or that it has an internal telecoil. The phone is being sold at Sprint Stores for $150, a mid-range price that is competitive with other telephones with similar features.

The Samsung models reveal that it is possible to develop handsets that work well with most hearing technology, and most particularly with hearing aids and cochlear implants that have been modified to minimize interference. Insofar as one manufacturer has already had considerable success in designing for access, it is not unreasonable to expect that other manufacturers can follow suit. Accordingly, compliance with rules mandating compatibility is technologically feasible.

4. **Addressing hearing technology compatibility in the manufacture of wireless telephones will not increase costs to such an extent that these telephones could not be successfully marketed.**

The availability of Samsung telephones has not affected the pricing of those telephones. Given their prices, one would have to assume that addressing compatibility has not increased the cost of production significantly, if at all. Samsung's web page references the SPH-N200 as "smaller and lighter than the wildly popular SCH-3500 it replaces." As noted above, a second Samsung model, SCN-N150, provides similar access for hearing aid and cochlear implant users and anecdotal information indicates that at least one other Samsung model is compatible with hearing technology. Samsung is to be commended for its development of a digital telephone that is widely accessible to users of hearing technology. Other phone manufacturers should similarly design, develop, and manufacture handsets that are popular with customers with wide-ranging needs.

VI. The Commission should adopt a universal design approach when mandating compatibility for wireless telephones.

Cochlear joins consumer advocates in continuing to urge telephone manufacturers to address compatibility issues as part of the design of the technology, rather than as an afterthought for a limited number of telephones. As noted above, at least one manufacturer has already incorporated compatibility features within its phones. Accordingly, we urge the FCC to move forward in pressing all other manufacturers to incorporate access throughout their product lines. This approach is consistent with the Commission's decision to adopt universal design principles in its Section 255 rules. There, the Commission noted Congress's intent to make the accessibility requirements "applicable to each piece of equipment and to each service, and not more generally to product lines."[17] Particularly because so few phones have been developed that are

[17] *In the Matter of Implementation of Sections 255 and 251(a)(2) of the Communications Act of 1934, as Enacted by the Telecommunications Act of 1996, Access to Telecommunications Service,*

accessible, it is similarly imperative that these principles be incorporated into the Commission's rules implementing the HAC Act requirements. Anything short of this will create a second class status for consumers with hearing loss, as they will be relegated to far fewer wireless choices than the rest of the population.

VII. A phase-in schedule to implement universal design is appropriate.

While the redesign of wireless handsets to achieve compatibility has taken far too long, it is unrealistic to assume that manufacturers can implement all of the needed changes immediately. We urge that in the next design cycle, every manufacturer make at least one telephone in every price range that is compatible with hearing technology. Among other things, the definition of compatibility should include requirements for internal telecoil linkage and interference levels low enough to allow the user to easily and effectively make a telephone call. Within two years, requirements for universal design should be implemented—with nearly all telephones being compatible with hearing aids and cochlear implants. At that time, only telephones for which compatibility is not technically feasible should be exempt from the HAC requirements. To receive an exemption for any phones, manufacturers must be prepared to demonstrate why it is not possible to make such phones usable for people who use hearing technology.

VIII, Conclusion

Cochlear Americas would like to take this opportunity to thank the Federal Communications Commission for now addressing the issue of the compatibility of wireless telephones with hearing aids and cochlear implants. Consistent with our mission

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Telecommunications Equipment and Customer Premises Equipment by Persons with Disabilities, Report

of addressing the lifelong needs of our customers, we are pleased to have the opportunity to assist in this rulemaking effort.

Respectfully submitted,

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and Order and Further Notice of Inquiry, WT Dkt. No. 96-198 at ¶49 (September 29, 1999).